

FOR TIMEX/SINCLAIR ENTHUSIASTS

PUBLISHED BY WMJ DATA SYSTEMS

* * Volume 2, Number 3 * *

From the Desk of Bill Johnson

The Summer is normally the slow time of year for us. This year we have been very busy all year with very little slow down. This could be one excuse we could give for being a couple of weeks late with this issue. But since we feel that there is no excuse for being late we will only offer you our apologies. All we can say is we will try our best to stick to our schedule and not to be late again.

Now some good news! We have received many programs from you and you may be wondering when they will appear in QTS. Since many of these programs would take up a few pages to printout in QTS we have been holding them back to use the space for articles we have. I have decided to publish an extra issue, QTS PLUS, in September which will feature only programs for the Timex/Sinclair computers. This issue will be sent to all subscribers of QTS. If all goes well and we keep receiving a large enough number of programs this QTS PLUS will come out every six months or so. QTS PLUS will contain no articles, news or ads; only programs. A cassette of all programs contained in QTS PLUS will be available for a small fee for each type of computer, this will save typing in some of the long programs.

We have raised the subscription price of QuarTerS to \$10.00 per year or \$16.00 for a two year subscription. A 'BEST OF QTS' will also be available after the Fall 1986 issue. This will contain most of the articles which have appeared in QTS during its first two years. This is an easier way to handle the back issue demand. Details on this and the QTS PLUS cassette will be available in future issues.

We need articles on the Sinclair QL we want to cover this computer. Also we would like to see more of you take advantage of our free classified ads.

Until next time...

TELL YOUR FRIENDS ABOUT QuarTerS

THANKS FOR SUBSCRIBING!

DEAR QTS:

I am an avid Timex 2068 user and am truly grateful for your publication. It is a much needed magazine for those of us who are trying to make it alone after being locked out in the cold by Timex. I have three questions for you that I hope you can answer:

1. Is there any way to give the sound generator in the Timex 2068 a complete list of notes to play through without the computer intervening? I noticed the Commodore 64 has this quality when I broke into a program that was playing a tune, and even though the program was not running, the melody kept on going.
2. Do you know where I can get hold of the Timex Technical Guide for the T/S 2068? It contains schematic drawings of the computer and port assignments as well as information on the extended screen modes that I desperately need.
3. How about printing an article on music on the T/S 2068?

I also have another method not mentioned in your T/S 2068 Basic Tutor column to recognize special graphics characters on the screen using the SCREEN\$ command. One could relocate the character set into RAM and redefine certain unused symbols and letters so that it matches your desirable graphic characters. This way, the BASIC command SCREEN\$ can recognize your UDG's (or at least pseudo-UDG).

Yours sincerely,

Alvin Albrecht
Alberta, Canada

Dear Alvin:

Thanks for the kind words. I will try to answer your questions to the best of my ability, not having investigated the sound capabilities of the TS2068. I will answer your

second question first. The TS2068 Technical Guide is available with all known bugs corrected and professionally printed through: TIME DESIGNS MAGAZINE, 29722 Hult Rd, Colton, OK 97017. Its price is \$25.00 post paid, check or money order.

Now to your first question the TS2068 manual states that upon program termination and after every immediate command the TS2068 will turn the sound chip off. So as far as I can tell there is no way for sound to continue even though the program is not running. If I am wrong I am sure that some of our readers will let me know and I will pass the information on in a future issue.

I would love to print an article on music on the TS2068. I know that the interest in this field seems to be increasing as I have read a few articles in other publications. Maybe some of our readers share this interest and can send in an article on this subject or maybe send us a song or two that will run on the TS2068.

Sincerely,

Bill Johnson

DEAR QTS:

Received my first copy of QTS last week and found it quite interesting.

I tried the program, "Address Book" and I can't make it run. In step 60, LET Z=Z+1, where is Z defined? Is something missing?

I have another question however, of more urgent importance to me. How do I interface a Memotech 64K RAM pack with my TS1500? The RAM Pak works fine with a TS1000 but not with the 1500. Is some modification needed, either to the RAM Pak or to the 1500?

I hope that you or one of your readers can help me.

Sincerely,

Blayne E. Arneson
9211 S. Harding Ave.
Evergreen Park, IL 60642

Dear Blayne:

I do not know the answer on your Memotech question so I printed your address and I am sure that one of our readers will help you out with your problem. Please share the answer with us so that we can share it with our readers.

The Address Book program was designed to run in 2K of memory so the value of Z must be put in manually. So enter LET Z=1 than enter GO TO 1 to run the program. You only have to do this the first time you use the program. After you have saved the program the value of Z will remain. Sorry if this caused you any problems as we did not notice this when we printed it out.

Sincerely,

Bill Johnson

DEAR QTS:-----

As long as one has a letter quality printer it doesn't matter what computer's being used or what word processor as long as the final copy looks good, but still I'm wondering if the TS2068 really has any "cottage industry" possibilities? If ye olde Timex couldn't make money and the independents have had to be extraordinarily stalwart, is the public going to be satisfied with the TS2068 for computer services? I wish you'd have an article in QTS by someone who had actually run, not a software producing, but a manuscript producing or spreadsheet and accounting service on the TS2068.

Thanks,

Joan Kealy

Dear Joan:

Good point! I believe that there are

a few businesses using T/S computers. If you recall in the SPRING 1986 issue in the DEAR QTS section Jim Scherer wrote in and described how he uses his TS1000's in his Garden Center.

About two years ago my business, WMJ DATA SYSTEMS, became to large to manage by hand. While I maintained our mailing lists on a TS2068 it was becoming a hassle with the long and sometimes unreliable cassette saving. I also wanted to handle all of the bookkeeping and wanted to computerize our rather bulky inventory. I had expanded our business to carry software for the Commodore 64 at the time, since then we also carry software for the APPLE, ATARI, IBM, and TRS-80. As you can see we no longer carried only about 75 different items for the T/S's we had increased our product line to over 500 different items. With all of this I was not able to keep track of things in my head as I used to. Things like filling daily orders, reorder points, back orders and the such were becoming difficult tasks. So I needed to computerize.

At the time disk drive units for the TS2068 were only rumors and I did not have time to wait so I decided on using the Commodore 64 we had sitting around collecting dust. If there was a disk drive unit available for the TS2068 at the time I would have opted for the TS2068. Even though this would have meant hours of programming on my part, since there were no programs out to meet my needs. So I went with the C64, which I feel is quite a bit inadequate compared with the TS2068. So with the C64 I use the ACZ GENERAL LEDGER program for our bookkeeping needs, this is a version of a program originally written for the TS1000 and then for the TS2068, and VERSAINVENTORY for our inventory needs.

While at this time the disk drives and also the QL is available it would be a very large task for me to convert all of our records over for use with one of them.

The lack of disk drive or even a built in disk drive I feel is the reason for the Timex failure as far as sales go. I feel that if a disk drive was available at the birth of the TS2068 Timex would still be marketing them and Timex would be the number one home computer in the U.S., outselling Commodore. I feel that the lack of a disk drive has also hurt the Sinclair QL take off in this country, with estimates of any where between sales of 1,000 and 20,000 QL's, depending on who you talk to. This is a very small number when it comes to sales in the U. S.

So now that I've gotten way off of the point I will get back to your comments. I believe that the lack of use of the TS2068 in other than software producing businesses is due to the lack of a disk drive at the initial marketing of the machine. I have heard from a few people who have written and mentioned that they use a T/S in a bookkeeping business and also from someone who uses it as a word processor as a freelance writer.

If any of our readers uses a T/S in their business please write in and let us know what kind of set-up you have and what chores you use it for. I think alot of readers would be interested in knowing about it.

Sincerely,

Bill Johnson.

SHORT TS1000 PROGRAM by Chuck Dawson

```

10 REM "MATCHSTICKS"
20 RAND
30 PRINT "PICK A NUMBER 5 TO 3
0"
40 INPUT N
50 IF N>30 THEN GOTO 40
60 CLS
70 GOSUB 250
80 GOSUB 380
90 IF N=1 THEN PRINT "YOU WIN"
100 IF N=1 THEN GOTO 470
110 LET X=N-1
120 LET X=X-4
130 IF X>0 THEN GOTO 120
140 LET X=X+4
150 IF X=4 THEN LET X=1+INT (RN
D+3)
160 LET N=N-X
170 PRINT "I TAKE ";X
180 GOSUB 380
190 IF N=1 THEN PRINT "I WIN,
200 IF N=1 THEN GOTO 470
210 PRINT "YOUR MOVE"
220 INPUT G
300 IF G>3 THEN GOTO 220
440 LET N=N-G
550 GOTO 80
660 PRINT AT 4,0;
770 FOR I=1 TO N
880 PRINT " ",
990 NEXT I
3000 PRINT
310 FOR J=1 TO 7
320 FOR I=1 TO N
330 PRINT " ";
340 NEXT I
350 PRINT
360 NEXT J
365 PRINT AT 20,0;"HE WHO PICKS
UP THE LAST ONE LOSES"
370 RETURN
380 FOR I=N TO N+(N<30)+(N<29)
390 FOR J=4 TO 1
400 PRINT AT J,I," ";
410 NEXT J
420 PRINT
430 NEXT I
440 RETURN
450 SAVE "MATCHSTICKS"
460 RUN

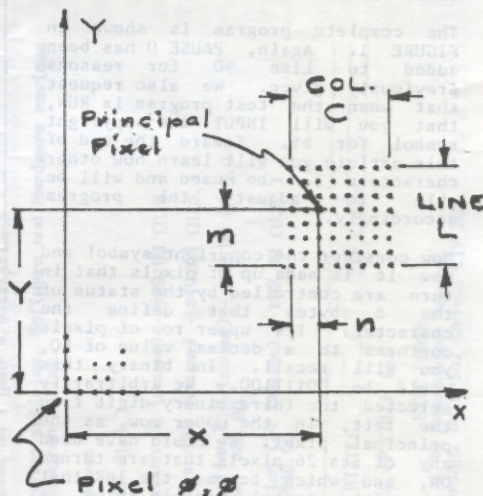
```


In the four preceding issues of QuarterS, we discussed the use of SCREENS, ATTRIBUTES, the System Addresses 23684/5, and the Display File starting at address 16384. The TS2068 is richly endowed and very versatile in this capacity. In following issues we will present several short game programs showing how each of these methods may be used, singly or in combination, to their best advantage.

USING POINT

We speak of Lines (or rows) and

With this understanding in mind, we can show the mathematical relationship between Lines and Columns on one hand and pixel dimensioning of x and y on the other. Consider an enlarged view of the area around the lower left corner of the screen, showing a typical block defined by Line, L , and Column, C , and containing 64 pixels...



From this layout we can deduce that the relationship between pixel x,y dimensioning and (L,C) is...

$$x = 8 * C + n$$
$$y = 8 * (21 - L) + m$$

where "m" and "n" each have values from 0 to 7, to locate the principal pixel in the 8 x 8 cluster, measured from its own lower, left corner.

We can now go back to the usual test routine of four-direction movement and insert a Line 70 that introduces POINT as a means of detecting the principal pixel in the PRINT POSITION block. If this pixel is ON, then POINT returns a one, if OOF, it returns zero.

For "n" we used a value of 2 and for "m" a value of 7. The reason for these values will soon be evident.

The complete program is shown in FIGURE 1. Again, PAUSE 0 has been added to Line 90 for reasons previously given. We also request that when the test program is RUN, that you will INPUT the copyright symbol for b\$. Toward the end of this article you will learn how other characters can be used and will be able to adjust the program accordingly.

Now consider the copyright symbol and how it is made up of pixels that in turn are controlled by the status of the 8 bytes that define the character. Its upper row of pixels conforms to a decimal value of 60, you will recall. In binary this would be 00111100. We arbitrarily selected the third binary digit from the left, in the upper row, as the principal pixel. We could have used any of its 26 pixels that are turned ON, and which become the INK that makes the symbol visible to us. A different pixel means a change in values of "m" and "n", in Line 70.

POINT can also be used in a negative sense. It could be done by selecting a principal pixel that is OFF and then having Line 70 equate POINT to 0, instead of 1. It's not usually

done this way, as an element of vagueness enters.

This article concludes the series on the detection of characters in the print position. I have tried to show how each method works, under similar circumstances, so that the various methods may be compared and the best one selected for a particular application. Most of the time it will make little or no difference. Naturally, those methods requiring extensive calculations in Line 70, like those encountered with the Byte Formula and POINT, will run a little slower than the others. But the time difference is barely perceptible as the TS 2068 calculates rapidly.

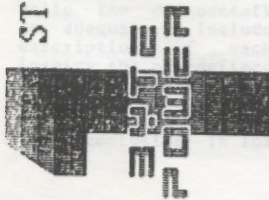
```
2 INPUT b$
4 FOR n=1 TO 35
6 PRINT AT 21+RAND,31+RAND;b$
8 NEXT n
10 LET L=10: LET C=15
30 LET LL=LL: LET CC=C
40 LET L=L+(INKEY$="5" AND L<2)
1) -(INKEY$="7" AND L>0)
50 LET C=C+(INKEY$="8" AND C<3)
1) -(INKEY$="5" AND C>0)
60 PRINT AT L,C;
70 IF POINT (8+C+2,8+(21-L)+7)
=1 THEN BEEP .05,25
80 PRINT " "
90 PRINT AT LL,CC;" " AND (LL<
) L OR CC<)C): PAUSE 0
100 GO TO 30
```

FIGURE 1

PRINT POSITION

RE-EVALUATED

In working thru the examples in this series on PRINT POSITION and the various methods of identifying characters in this location, you may have discovered or have been aware that a line like Line 60, defining the PRINT POSITION, is necessary only in the case of the method that uses



ST CLASS MAGAZINE

At last a computer magazine on cassette for the TITEX SINCLAIR 2000. No longer will you have to type in long fastidious programs, no more bugs and headaches... just load and run.

EYTE POWER is the ultimate magazine for the TS2068. Each cassette is full of programs, a real TS2068 owner's dream.

EYTE POWER is a software based magazine with over 130 programs per year, most of them in Machine Language. Programs vary from the Arcade game to the Word-Processor. And all that for...

LESS THAN 39 cents A PROGRAM.
(based on 1 year subscription)

Plus you get programming articles, Software and Hardware reviews and tips on how to program better.

I would like to receive:

- ☐ One issue - \$5.50 (U.S.)
- ☐ 6 Month subscription (6 Issues) - \$29.99 (U.S.)
- ☐ 1 Year subscription (12 Issues) - \$49.99 (U.S.)
- ☐ 18 Month subscription (18 Issues) - \$69.99 (U.S.)
You save almost \$30.00
- ☐ 2 Year subscription (24 Issues) - \$99.99 (U.S.)
You save over \$40.00

NAME:

ADDRESS:

CITY:

STATE:

ZIP CODE:

Send your MONEY ORDER or CHECK to:

EYTE POWER

1740 Meadowview Avenue,
Pickering, Ontario, Canada L1V 3G9

system address 23684 and 23685. In all of the other methods Line 60 could be omitted and Line 80 changed to read...

80 PRINT AT L,C;"_"

This is because these methods are dependent only upon the values of L and C, and such values are established in Lines 40 and 50. They ultimately become the PRINT POSITION because of the manner in which the program is constructed. Generally a line like Line 60 is not used at all.

The author employed Line 60 and used the same program construction throughout so that a minimum of change would occur in presenting the various methods, and to facilitate comparisons among them.

QTS

* * NEW PRODUCTS * *
*
* The items below are not in our
* current catalog:
* BOOK: The Tisex/Sinclair User's
* Encyclopedia (TS1000, TS2068,
* ZX81) 218 pages. Only \$8.00
*
* QL Software: War in the East
* Master and Scenario I \$27.95
* Master and Scenario I, II 41.95
* Master and I, II, III 53.95
* Scenario II or III 18.95
*
* TS2068: Colonize the Universe
* by Timothy Kessler only \$16.95
* A fun board-type game, just like
* a galactic Monopoly game.
*
* Add \$3.00 per order for shipping
* & handling.
*
* WMJ DATA SYSTEMS
* 4 Butterfly Drive
* Hauppauge, NY 11788
*

REVIEW: ZEBRA SYSTEMS SPECTRUM
EMULATOR CARTRIDGE

by Alvin Albrecht

DESCRIPTION: A Spectrum emulator which allows a TS2068 to run Sinclair Spectrum software.

MANUFACTURER:

ZEBRA SYSTEMS, INC.
78-06 Jamaica Ave.
Woodhaven, NY 11421

LIST PRICE: \$19.95 + \$3.00p&h
(Catalog number C226)

The ZEBRA SYSTEMS SPECTRUM EMULATOR CARTRIDGE is one of the best Spectrum emulation products around ranking high along side the ROMSWITCH. It enables the user to type in programs from the vast range of Spectrum publications and to run many excellent software packages created for it. Many exciting Spectrum peripherals can be used if plugged into a TS2068-Spectrum pin descrambler (also available from Zebra Systems).

As its name implies, this emulator easily plugs into the TS2068's cartridge slot, so you won't have to worry about attempting to install any ROM board and accidentally damaging the internal parts of your computer. When the computer is switched on, the familiar Timex and Sinclair copyright appears and you are still in the TS2068 mode. To enter the SPECTRUM mode, all you have to do is type OUT 244,3. To return to TS2068 mode, type OUT 244,0 : NEW. Because of this it is possible to leave the cartridge plugged in at all times, even when you are running TS2068 programs.

In my history of owning the emulator (which includes loading over 32 different Spectrum programs) I have never had one loading problem or seen any program that this emulator does not work on. If the program does not work, a helpful aid sheet that was included gives possible solutions to more successful loading.

Overall, I was very pleased with this product and am confident enough in it to say that it runs very close to 100% of the Spectrum software available. Ever since I bought it, a wide new world of programs has been available to me to satisfy my every taste, and with every package I have been completely satisfied. This is a buy you can't miss!

QTS

ON SALE!

QL Computer	\$299.95*
Flatscreen Pocket TV	99.95
QL Chess	24.95
QL Cavern	19.95
2068 COMPASS	19.95
1000 Supertape	19.95
2068 Diamond Mike	17.95
2068 Great Game and Graphics Show	17.95
TV Batteries	9.95
2068 Tape Catalog	2.00

Prices include shipping.

JRC Software and Games

P. O. Box 448
Scottsburg, IN 47170

* Send cashier's check or money order for QL Computer. Get \$30 credit toward software.

Indiana residents please include 5% for sales tax.

More QL and 2068 programs available later.

REVIEW: REDCOATS
by Tom Aroella

DESCRIPTION: A strategic game written for the Spectrum which will run on the TS2068 with or without a Spectrum Emulator.

MANUFACTURER:

M. C. LOTHORIE
56A PARKLANE
POYNTON, ENGLAND

AVAILABILITY: Directly through the manufacturer above. Imported to the U. S. by SHARP'S, RT 10 Box 459, Mechanicsville, VA 23111. Tel. (804)730-9697. Also available through many U. S. software dealers.

SUGGESTED RETAIL: \$19.95.

Redcoats is a wargame requiring strategy as opposed to quick reflexes. As the commander of either the American or British forces you must maneuver and attack the enemy while minimizing your own casualties. The game includes five pre-defined maps and battle scenarios based on actual battles from the Revolutionary War as well as the option of designing and saving your own scenarios. At your disposal are cavalry, artillery, riflemen and muskettiers. (Muskets are less accurate but easier to load than rifles). Each unit is listed by name with its strength, moral and whether or not it is behind cover. Based on these facts the outcome of each attack is determined. The game ends when one side or the other is eliminated. The computer then decides the winner by tallying up the casualties and assigning scores. The game can be played by two or by one against the computer at various levels of skill.

While the documentation is brief it is adequate. Included is a brief description of each battle. In loading the pre-defined scenarios the first prompt asks if the scenario is on disk, the second prompt asks if it is on tape. This order may cause some confusion in loading but poses

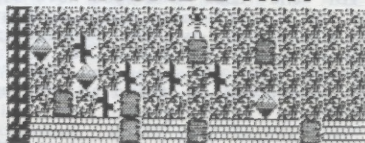
no major difficulties. The worst aspect of the game is the incessant beeping, which can only be stopped by entering a command, informing you that you must move a unit. It can be more than a little distracting as you try to plan grand strategies. The option of designing your own battles means the game has an endless number of variations.

Overall an excellent game for those wishing to exercise their minds instead of their wrists or for the frustrated Napoleon.

QTS

DIAMOND MIKE

NEW MACHINE CODE ARCADE HIT!



JRC SOFTWARE proudly announces a breakthrough in 2068/Spectrum compatible games called **DIAMOND MIKE**. It is a true arcade quality game with brilliant graphics, color and sound. The object is to collect enough diamonds before time runs out, while avoiding falling rocks, ferocious amebas and killer butterflies. There are 22 different screens and 6 levels! You get **DIAMOND MIKE** and **CAVERN** (a great space game we imported from Canada). Sale priced at \$17.95! Ten day money-back guarantee! Just \$2.00 extra for C.O.D. Or mail check or money order to:

JRC SOFTWARE

P.O. Box 448
Scottsburg, IN 47170
Phone (812) 752-5106 or 752-6071

Diamond Mike is 100% 16K Machine Code!

TS1500 A&J MICRODRIVE PROBLEM AND SOLUTION

by Willie Jones

Let me introduce myself, and give recognition to the man that made this article possible. My name is Willie Jones and the man who solved my problem is Fred Nachbaur. You may know him from Silicon Mountain Computers, formerly known as Syncware Company. I'm the proud owner of a TS1500 A&J Micro Drive and Timex 1016 RAM pack, but not all was happy. When I first received my A&J I was in a hurry to hook it up.

I connected everything and then started to take all my most used software and proceeded to put them on Wafers. All was well until I tried to SAVE my 27K Profile. That was the start of all my problems. I should have had no problem, but boy was I fooled. To begin with the A&J ESOS (Exatron Stringy Operating System) takes the top 1K of RAM for manipulation of the ESOS. A Timex 1500 and 1016 RAM gives me 32K, minus 1K for the ESOS and you have 31K left. So a little math tells me that with 31K minus my 27K Profile, I still have 4K to burn. Boy was I surprised, when all I saw was 'VERIFY BADS' everytime I tried to SAVE my Profile.

It was no help when I changed my RAM packs than computers. I even went as far as to send my A&J interface in for a replacement, but that didn't work either. However there is a way to use the A&J, but without a Wafer directory or any other type of management, this is known as Economy Mode. It will work and uses no RAM but you have to remember what is on every wafer and you save by number not name, also you stand the chance of overwriting a program all ready saved. You also have no way of knowing how much space is left on a wafer. Like I said it will work but without the full benefits of the A&J.

Now let me tell you why it won't work and a way around the problem. The

whole thing revolves around the Timex 1016 RAM pack. It seems that it is not fully decoded, therefore, when the A&J tries to take RAM to the top it takes it beyond the 32K limit. Then when the ESOS tries to store its save check information and verification, it has nothing to compare with. This gives you a VERIFY BAD everytime you try to save a program that is more than 16K. Now for some good news, let me thank Fred Nachbaur once more for his help, without it I would not be writing this. The way around all this trouble using the 1016 RAM pack on the TS1500 is to bypass the ESOS RAM set. To do that all you have to do is poke RAM top to 31K or less. I use POKE 16388,0 POKE 16389,188 then NEW, this gives me 31K. Now instead of using USR 12345 use USR 13082 or USR 13083. This will put you in the ESOS but bypasses the RAM set built into the A&J. Now just use the ESOS menu and your ready to go. When I talked to Fred he said to POKE RAM top to 192 for the full 32K, but he also said he had not tried this. I tried this and had no luck. But by leaving 1K or more open above RAM top the system works great.

The reason for this is the ESOS needs the top 1K for its own use. By going pass the ESOS RAM set I think it affects the initialization process of the A&J, and the top 1K is not left. Well I hope this helps all you A&J TS1500 fans. I know it sure helped me.

QTS

SHORT T/S TIPS

These tips were sent in by Peter Stawasz, Clio, MI:

Here are a few more helpful hints on solving the LOAD/SAVE problems with a TS1000/1500/ZX81:

1. Try using shielded cables between one's computer and recorder. Shielded cables are usually sold in six-foot lengths and have the same 3.5mm plugs as do the coupled standard MIC/EAR cables that came with the TS computer as stock equipment. These cables are sold at a cost of around \$2.00 each, and are marketed as shielded audio cables. What this means to the TS1000 user is that these cables help to eliminate any stray electromagnetic interference that may play havoc with the delicate data transfer process of the computer.
2. Always maintain the state of your recorder--clean and demagnetize the heads at least every ten hours of use with a reputable cleaner/demagnetizer unit. This will help to maintain the quality of data transfer.

These tips were sent in by Anthony Willing, Vashon, WA:

1. Next time you have some epoxy cement mixed up, take the time to glue the key into the slot on your edge connectors (RAM packs, etc.) by placing just a bit of glue at the top and bottom edges of the key. I've had a few of these fall out and the results of misaligning a RAM pack could be disastrous when you power up. (Sinclair Canada does this on all their RAM packs).
2. If you are using Radio Shack TP-10 printer paper (cat. no. 26-1332) in your 2040 printer, put 2 pennies at each end of the roll to keep the 1/4 inch smaller roll feeding evenly. (A very cheap fix indeed).

3. If you are still using a ZX/TS in the original case, place some rubber or felt "sticky pads" under the two rear feet. This allows the RAM pack to hang freely from the edge connector, and as you press the keyboard, the RAM will not work loose and flex, which causes the familiar "white-out" and resulting loss of data.

4. In PRINT statements, strings and prompts, use key words and tokens to save memory. Instead of a line like: 20 PRINT "Enter Today's Date", use: 20 PRINT "INPUT Today's Date", which saves 4 bytes. Do this by using the keyword THEN after the first quote mark, typing the I key for INPUT, and then deleting the THEN token. The computer simply prints whatever is within the quotation marks. AND, STOP, THEN, NOT, SLOW, FAST and RUN are also good candidates to use this way. Experiment with these and have fun.

Here's a short tip from Tom Aroella, Toronto, Ontario:

By using commands ON ERROR and GOTO it is possible to set up a password routine, on the TS2068, that is if not unbeatable at least very tough. In the listing below the ON ERROR command, which treats both STOP and BREAK as errors, send the computer back to line 30 if there are any errors. The program cannot be broken into or stopped unlike if only the INPUT command was used. For added protection a FOR/NEXT loop and NEW command has been added. This allows for only three attempts at the password before erasing the program. The password can be any string.

```
10 ON ERR GO TO 30
20 FOR x=1 TO 3
30 INPUT "Password please";a$
40 IF a$="QTS" THEN GO TO 100
50 PRINT "Incorrect, try again"

60 PAUSE 60: CLS
70 NEXT x
80 NEW
100 PRINT "You are now past the
password"
```

BASIC CAN BE FASTER
A dozen easy ways!
by Bill Johnson

PART TWO OF TWO

Last time we discussed four ways of speeding up BASIC. In this article we will discuss eight more ways!

5. When printing to the screen avoid scrolling the screen, this is a slow operation. Instead it is much faster to clear the screen and then print what you want.
6. Eliminate unnecessary commands and lines. On the TS2068 use multiple command lines. For example instead of...
10 PRINT "HELLO"
20 INPUT A\$

Why not write one line, as follows:

10 PRINT "HELLO": INPUT A\$

This will help speed up the program. REM statements are nice and make a program easy to follow. But REM statements do slow down the program a bit. Once the program is completed why not eliminate those REM statements? If you find it necessary to keep those REM statements in the program why not bypass them. If you start a routine with the following:

100 REM Alphabetizing Routine
110 FOR I=1 TO N

It is unnecessary for the computer to read line 100. Why not use GOTO 110 or GOSUB 110 instead of GOTO 100 or GOSUB 110. This will let the computer skip right over 100 without reading it.

7. Minimize GOTO's and GOSUB's. Although these commands are used often and are fairly quick they do slow down the computer somewhat. Their arguments must be converted from decimal to binary integer. So choose and place your GOTO's and GOSUB's carefully.
8. Write your programs in a clear, structured manner. A program that

WOW!

AT LAST! A VERY AFFORDABLE COMPUTER
AT A VERY AFFORDABLE PRICE

POWERFUL FULLY PROGRAMMABLE WITH 32K OF MEMORY—PORTS, RS-232C, 8-16, 1152 Baud MODELS (SMALL) AT ENTRY COMPARE—
COURTESY OF THE MEMORABLE TYPE REVISION—2000 BOUND YOUR
CHIP DESIGN—EDUCATIONAL—UNIQUE—UNIQUELY CONSIDERED AND
DESIGNED FOR SPEED—DESIGN—DESIGN CONSIDERED AND ANIMATED OR
PLAY—ACCORDING TO 810 ORIGINAL PLACES FOR FREE—FREE WITH
AND INTERESTING FUNCTIONS—AT AN AFFORDABLE PRICE

WE CANNOT TELL YOU THE NAME OF THE COMPUTER BUT IT WAS
MADE BY A FINEST WATCH COMPANY THEY USED TO BE FOR
2000

WE CANNOT TELL WHAT THE FACTORY HAD LEFT IN STOCK AND HAD
TO REMOVE THE LABELS THESE UNITS ARE UNPACKAGED 1984
BY HILL, ADAPTER AND MANUAL, BECAUSE THIS IS A DISCONTINUED
ITEM THERE IS NO WARRANTY.

LIMITED SUPPLY

GET THEM WHILE THEY LAST

BUY 1-1 UNIT FOR \$19.95 BUY 2-2 FOR \$39.95 BUY 3-3 WALL ADAPTOR \$9.95
BUY 1-1, 2-2 UNIT AND OPERATING FOR PARTS \$10.95 MANUAL COVER 100 PAGES \$2.95

See September 1984 issue of 73 for TIME/INTELLIGENCE article

CHIP BONANZA at these prices from now to 1984

1700	\$1.95 EA OR 10 FOR \$19.95
1710	\$1.95 EA OR 10 FOR \$19.95
1720	\$1.95 EA OR 10 FOR \$19.95
1730	\$1.95 EA OR 10 FOR \$19.95
1740	\$1.95 EA OR 10 FOR \$19.95
1750	\$1.95 EA OR 10 FOR \$19.95
1760	\$1.95 EA OR 10 FOR \$19.95
1770	\$1.95 EA OR 10 FOR \$19.95
1780	\$1.95 EA OR 10 FOR \$19.95
1790	\$1.95 EA OR 10 FOR \$19.95
1800	\$1.95 EA OR 10 FOR \$19.95
1810	\$1.95 EA OR 10 FOR \$19.95
1820	\$1.95 EA OR 10 FOR \$19.95
1830	\$1.95 EA OR 10 FOR \$19.95
1840	\$1.95 EA OR 10 FOR \$19.95
1850	\$1.95 EA OR 10 FOR \$19.95
1860	\$1.95 EA OR 10 FOR \$19.95
1870	\$1.95 EA OR 10 FOR \$19.95
1880	\$1.95 EA OR 10 FOR \$19.95
1890	\$1.95 EA OR 10 FOR \$19.95
1900	\$1.95 EA OR 10 FOR \$19.95
1910	\$1.95 EA OR 10 FOR \$19.95
1920	\$1.95 EA OR 10 FOR \$19.95
1930	\$1.95 EA OR 10 FOR \$19.95
1940	\$1.95 EA OR 10 FOR \$19.95
1950	\$1.95 EA OR 10 FOR \$19.95
1960	\$1.95 EA OR 10 FOR \$19.95
1970	\$1.95 EA OR 10 FOR \$19.95
1980	\$1.95 EA OR 10 FOR \$19.95
1990	\$1.95 EA OR 10 FOR \$19.95
2000	\$1.95 EA OR 10 FOR \$19.95
2010	\$1.95 EA OR 10 FOR \$19.95
2020	\$1.95 EA OR 10 FOR \$19.95
2030	\$1.95 EA OR 10 FOR \$19.95
2040	\$1.95 EA OR 10 FOR \$19.95
2050	\$1.95 EA OR 10 FOR \$19.95
2060	\$1.95 EA OR 10 FOR \$19.95
2070	\$1.95 EA OR 10 FOR \$19.95
2080	\$1.95 EA OR 10 FOR \$19.95
2090	\$1.95 EA OR 10 FOR \$19.95
2100	\$1.95 EA OR 10 FOR \$19.95
2110	\$1.95 EA OR 10 FOR \$19.95
2120	\$1.95 EA OR 10 FOR \$19.95
2130	\$1.95 EA OR 10 FOR \$19.95
2140	\$1.95 EA OR 10 FOR \$19.95
2150	\$1.95 EA OR 10 FOR \$19.95
2160	\$1.95 EA OR 10 FOR \$19.95
2170	\$1.95 EA OR 10 FOR \$19.95
2180	\$1.95 EA OR 10 FOR \$19.95
2190	\$1.95 EA OR 10 FOR \$19.95
2200	\$1.95 EA OR 10 FOR \$19.95
2210	\$1.95 EA OR 10 FOR \$19.95
2220	\$1.95 EA OR 10 FOR \$19.95
2230	\$1.95 EA OR 10 FOR \$19.95
2240	\$1.95 EA OR 10 FOR \$19.95
2250	\$1.95 EA OR 10 FOR \$19.95
2260	\$1.95 EA OR 10 FOR \$19.95
2270	\$1.95 EA OR 10 FOR \$19.95
2280	\$1.95 EA OR 10 FOR \$19.95
2290	\$1.95 EA OR 10 FOR \$19.95
2300	\$1.95 EA OR 10 FOR \$19.95
2310	\$1.95 EA OR 10 FOR \$19.95
2320	\$1.95 EA OR 10 FOR \$19.95
2330	\$1.95 EA OR 10 FOR \$19.95
2340	\$1.95 EA OR 10 FOR \$19.95
2350	\$1.95 EA OR 10 FOR \$19.95
2360	\$1.95 EA OR 10 FOR \$19.95
2370	\$1.95 EA OR 10 FOR \$19.95
2380	\$1.95 EA OR 10 FOR \$19.95
2390	\$1.95 EA OR 10 FOR \$19.95
2400	\$1.95 EA OR 10 FOR \$19.95
2410	\$1.95 EA OR 10 FOR \$19.95
2420	\$1.95 EA OR 10 FOR \$19.95
2430	\$1.95 EA OR 10 FOR \$19.95
2440	\$1.95 EA OR 10 FOR \$19.95
2450	\$1.95 EA OR 10 FOR \$19.95
2460	\$1.95 EA OR 10 FOR \$19.95
2470	\$1.95 EA OR 10 FOR \$19.95
2480	\$1.95 EA OR 10 FOR \$19.95
2490	\$1.95 EA OR 10 FOR \$19.95
2500	\$1.95 EA OR 10 FOR \$19.95
2510	\$1.95 EA OR 10 FOR \$19.95
2520	\$1.95 EA OR 10 FOR \$19.95
2530	\$1.95 EA OR 10 FOR \$19.95
2540	\$1.95 EA OR 10 FOR \$19.95
2550	\$1.95 EA OR 10 FOR \$19.95
2560	\$1.95 EA OR 10 FOR \$19.95
2570	\$1.95 EA OR 10 FOR \$19.95
2580	\$1.95 EA OR 10 FOR \$19.95
2590	\$1.95 EA OR 10 FOR \$19.95
2600	\$1.95 EA OR 10 FOR \$19.95
2610	\$1.95 EA OR 10 FOR \$19.95
2620	\$1.95 EA OR 10 FOR \$19.95
2630	\$1.95 EA OR 10 FOR \$19.95
2640	\$1.95 EA OR 10 FOR \$19.95
2650	\$1.95 EA OR 10 FOR \$19.95
2660	\$1.95 EA OR 10 FOR \$19.95
2670	\$1.95 EA OR 10 FOR \$19.95
2680	\$1.95 EA OR 10 FOR \$19.95
2690	\$1.95 EA OR 10 FOR \$19.95
2700	\$1.95 EA OR 10 FOR \$19.95
2710	\$1.95 EA OR 10 FOR \$19.95
2720	\$1.95 EA OR 10 FOR \$19.95
2730	\$1.95 EA OR 10 FOR \$19.95
2740	\$1.95 EA OR 10 FOR \$19.95
2750	\$1.95 EA OR 10 FOR \$19.95
2760	\$1.95 EA OR 10 FOR \$19.95
2770	\$1.95 EA OR 10 FOR \$19.95
2780	\$1.95 EA OR 10 FOR \$19.95
2790	\$1.95 EA OR 10 FOR \$19.95
2800	\$1.95 EA OR 10 FOR \$19.95
2810	\$1.95 EA OR 10 FOR \$19.95
2820	\$1.95 EA OR 10 FOR \$19.95
2830	\$1.95 EA OR 10 FOR \$19.95
2840	\$1.95 EA OR 10 FOR \$19.95
2850	\$1.95 EA OR 10 FOR \$19.95
2860	\$1.95 EA OR 10 FOR \$19.95
2870	\$1.95 EA OR 10 FOR \$19.95
2880	\$1.95 EA OR 10 FOR \$19.95
2890	\$1.95 EA OR 10 FOR \$19.95
2900	\$1.95 EA OR 10 FOR \$19.95
2910	\$1.95 EA OR 10 FOR \$19.95
2920	\$1.95 EA OR 10 FOR \$19.95
2930	\$1.95 EA OR 10 FOR \$19.95
2940	\$1.95 EA OR 10 FOR \$19.95
2950	\$1.95 EA OR 10 FOR \$19.95
2960	\$1.95 EA OR 10 FOR \$19.95
2970	\$1.95 EA OR 10 FOR \$19.95
2980	\$1.95 EA OR 10 FOR \$19.95
2990	\$1.95 EA OR 10 FOR \$19.95
3000	\$1.95 EA OR 10 FOR \$19.95
3010	\$1.95 EA OR 10 FOR \$19.95
3020	\$1.95 EA OR 10 FOR \$19.95
3030	\$1.95 EA OR 10 FOR \$19.95
3040	\$1.95 EA OR 10 FOR \$19.95
3050	\$1.95 EA OR 10 FOR \$19.95
3060	\$1.95 EA OR 10 FOR \$19.95
3070	\$1.95 EA OR 10 FOR \$19.95
3080	\$1.95 EA OR 10 FOR \$19.95
3090	\$1.95 EA OR 10 FOR \$19.95
3100	\$1.95 EA OR 10 FOR \$19.95
3110	\$1.95 EA OR 10 FOR \$19.95
3120	\$1.95 EA OR 10 FOR \$19.95
3130	\$1.95 EA OR 10 FOR \$19.95
3140	\$1.95 EA OR 10 FOR \$19.95
3150	\$1.95 EA OR 10 FOR \$19.95
3160	\$1.95 EA OR 10 FOR \$19.95
3170	\$1.95 EA OR 10 FOR \$19.95
3180	\$1.95 EA OR 10 FOR \$19.95
3190	\$1.95 EA OR 10 FOR \$19.95
3200	\$1.95 EA OR 10 FOR \$19.95
3210	\$1.95 EA OR 10 FOR \$19.95
3220	\$1.95 EA OR 10 FOR \$19.95
3230	\$1.95 EA OR 10 FOR \$19.95
3240	\$1.95 EA OR 10 FOR \$19.95
3250	\$1.95 EA OR 10 FOR \$19.95
3260	\$1.95 EA OR 10 FOR \$19.95
3270	\$1.95 EA OR 10 FOR \$19.95
3280	\$1.95 EA OR 10 FOR \$19.95
3290	\$1.95 EA OR 10 FOR \$19.95
3300	\$1.95 EA OR 10 FOR \$19.95
3310	\$1.95 EA OR 10 FOR \$19.95
3320	\$1.95 EA OR 10 FOR \$19.95
3330	\$1.95 EA OR 10 FOR \$19.95
3340	\$1.95 EA OR 10 FOR \$19.95
3350	\$1.95 EA OR 10 FOR \$19.95
3360	\$1.95 EA OR 10 FOR \$19.95
3370	\$1.95 EA OR 10 FOR \$19.95
3380	\$1.95 EA OR 10 FOR \$19.95
3390	\$1.95 EA OR 10 FOR \$19.95
3400	\$1.95 EA OR 10 FOR \$19.95
3410	\$1.95 EA OR 10 FOR \$19.95
3420	\$1.95 EA OR 10 FOR \$19.95
3430	\$1.95 EA OR 10 FOR \$19.95
3440	\$1.95 EA OR 10 FOR \$19.95
3450	\$1.95 EA OR 10 FOR \$19.95
3460	\$1.95 EA OR 10 FOR \$19.95
3470	\$1.95 EA OR 10 FOR \$19.95
3480	\$1.95 EA OR 10 FOR \$19.95
3490	\$1.95 EA OR 10 FOR \$19.95
3500	\$1.95 EA OR 10 FOR \$19.95
3510	\$1.95 EA OR 10 FOR \$19.95
3520	\$1.95 EA OR 10 FOR \$19.95
3530	\$1.95 EA OR 10 FOR \$19.95
3540	\$1.95 EA OR 10 FOR \$19.95
3550	\$1.95 EA OR 10 FOR \$19.95
3560	\$1.95 EA OR 10 FOR \$19.95
3570	\$1.95 EA OR 10 FOR \$19.95
3580	\$1.95 EA OR 10 FOR \$19.95
3590	\$1.95 EA OR 10 FOR \$19.95
3600	\$1.95 EA OR 10 FOR \$19.95
3610	\$1.95 EA OR 10 FOR \$19.95
3620	\$1.95 EA OR 10 FOR \$19.95
3630	\$1.95 EA OR 10 FOR \$19.95
3640	\$1.95 EA OR 10 FOR \$19.95
3650	\$1.95 EA OR 10 FOR \$19.95
3660	\$1.95 EA OR 10 FOR \$19.95
3670	\$1.95 EA OR 10 FOR \$19.95
3680	\$1.95 EA OR 10 FOR \$19.95
3690	\$1.95 EA OR 10 FOR \$19.95
3700	\$1.95 EA OR 10 FOR \$19.95
3710	\$1.95 EA OR 10 FOR \$19.95
3720	\$1.95 EA OR 10 FOR \$19.95
3730	\$1.95 EA OR 10 FOR \$19.95
3740	\$1.95 EA OR 10 FOR \$19.95
3750	\$1.95 EA OR 10 FOR \$19.95
3760	\$1.95 EA OR 10 FOR \$19.95
3770	\$1.95 EA OR 10 FOR \$19.95
3780	\$1.95 EA OR 10 FOR \$19.95
3790	\$1.95 EA OR 10 FOR \$19.95
3800	\$1.95 EA OR 10 FOR \$19.95
3810	\$1.95 EA OR 10 FOR \$19.95
3820	\$1.95 EA OR 10 FOR \$19.95
3830	\$1.95 EA OR 10 FOR \$19.95
3840	\$1.95 EA OR 10 FOR \$19.95
3850	\$1.95 EA OR 10 FOR \$19.95
3860	\$1.95 EA OR 10 FOR \$19.95
3870	\$1.95 EA OR 10 FOR \$19.95
3880	\$1.95 EA OR 10 FOR \$19.95
3890	\$1.95 EA OR 10 FOR \$19.95
3900	\$1.95 EA OR 10 FOR \$19.95
3910	\$1.95 EA OR 10 FOR \$19.95
3920	\$1.95 EA OR 10 FOR \$19.95
3930	\$1.95 EA OR 10 FOR \$19.95
3940	\$1.95 EA OR 10 FOR \$19.95
3950	\$1.95 EA OR 10 FOR \$19.95
3960	\$1.95 EA OR 10 FOR \$19.95
3970	\$1.95 EA OR 10 FOR \$19.95
3980	\$1.95 EA OR 10 FOR \$19.95
3990	\$1.95 EA OR 10 FOR \$19.95
4000	\$1.95 EA OR 10 FOR \$19.95
4010	\$1.95 EA OR 10 FOR \$19.95
4020	\$1.95 EA OR 10 FOR \$19.95
4030	\$1.95 EA OR 10 FOR \$19.95
4040	\$1.95 EA OR 10 FOR \$19.95
4050	\$1.95 EA OR 10 FOR \$19.95
4060	\$1.95 EA OR 10 FOR \$19.95
4070	\$1.95 EA OR 10 FOR \$19.95
4080	\$1.95 EA OR 10 FOR \$19.95
4090	\$1.95 EA OR 10 FOR \$19.95
4100	\$1.95 EA OR 10 FOR \$19.95
4110	\$1.95 EA OR 10 FOR \$19.95
4120	\$1.95 EA OR 10 FOR \$19.95
4130	\$1.95 EA OR 10 FOR \$19.95
4140	\$1.95 EA OR 10 FOR \$19.95
4150	\$1.95 EA OR 10 FOR \$19.95
4160	\$1.95 EA OR 10 FOR \$19.95
4170	\$1.95 EA OR 10 FOR \$19.95
4180	\$1.95 EA OR 10 FOR \$19.95
4190	\$1.95 EA OR 10 FOR \$19.95
4200	\$1.95 EA OR 10 FOR \$19.95
4210	\$1.95 EA OR 10 FOR \$19.95
4220	\$1.95 EA OR 10 FOR \$19.95
4230	\$1.95 EA OR 10 FOR \$19.95
4240	\$1.95 EA OR 10 FOR \$19.95
4250	\$1.95 EA OR 10 FOR \$19.95
4260	\$1.95 EA OR 10 FOR \$19.95
4270	\$1.95 EA OR 10 FOR \$19.95
4280	\$1.95 EA OR 10 FOR \$19.95
4290	\$1.95 EA OR 10 FOR \$19.95
4300	\$1.95 EA OR 10 FOR \$19.95
4310	\$1.95 EA OR 10 FOR \$19.95
4320	\$1.95 EA OR 10 FOR \$19.95
4330	\$1.95 EA OR 10 FOR \$19.95
4340	\$1.95 EA OR 10 FOR \$19.95
4350	\$1.95 EA OR 10 FOR \$19.95
4360	\$1.95 EA OR 10 FOR \$19.95
4370	\$1.95 EA OR 10 FOR \$19.95
4380	\$1.95 EA OR 10 FOR \$19.95
4390	\$1.95 EA OR 10 FOR \$19.95
4400	\$1.95 EA OR 10 FOR \$19.95
4410	\$1.95 EA OR 10 FOR \$19.95
4420	\$1.95 EA OR 10 FOR \$19.95
4430	\$1.95 EA OR 10 FOR \$19.95
4440	\$1.95 EA OR 10 FOR \$19.95
4450	\$1.95 EA OR 10 FOR \$19.95
4460	\$1.95 EA OR 10 FOR \$19.95
4470	\$1.95 EA OR 10 FOR \$19.95
4480	\$1.95 EA OR 10 FOR \$19.95
4490	\$1.95 EA OR 10 FOR \$19.95
4500	\$1.95 EA OR 10 FOR \$19.95
4510	\$1.95 EA OR 10 FOR \$19.95
4520	\$1.95 EA OR 10 FOR \$19.95
4530	\$1.95 EA OR 10 FOR \$19.95
4540	\$1.95 EA OR 10 FOR \$19.95
4550	\$1.95 EA OR 10 FOR \$19.95
4560	\$1.95 EA OR 10 FOR \$19.95
4570	\$1.95 EA OR 10 FOR \$19.95
4580	\$1.95 EA OR 10 FOR \$19.95
4590	\$1.95 EA OR 10 FOR \$19.95
4600	\$1.95 EA OR 10 FOR \$19.95
4610	\$1.95 EA OR 10 FOR \$19.95
4620	\$1.95 EA OR 10 FOR \$19.95
4630	\$1.95 EA OR 10 FOR \$19.95
4640	\$1.95 EA OR 10 FOR \$19.95
4650	\$1.95 EA OR 10 FOR \$19.95
4660	\$1.95 EA OR 10 FOR \$19.95
4670	\$1.95 EA OR 10 FOR \$19.95
4680	\$1.95 EA OR 10 FOR \$19.95
4690	\$1.95 EA OR 10 FOR \$19.95
4700	\$1.95 EA OR 10 FOR \$19.95
4710	\$1.95 EA OR 10 FOR \$19.95
4720	\$1.95 EA OR 10 FOR \$19.95
4730	\$1.95 EA OR 10 FOR \$19.95
4740	\$1.95 EA OR 10 FOR \$19.95
4750	\$1.95 EA OR 10 FOR \$19.95
4760	\$1.95 EA OR 10 FOR \$19.95
4770	\$1.95 EA OR 10 FOR \$19.95
4780	\$1.95 EA OR 10 FOR \$19.95
4790	\$1.95 EA OR 10 FOR \$19.95
4800	\$1.95 EA OR 10 FOR \$19.95
4810	\$1.95 EA OR 10 FOR \$19.95
4820	\$1.95 EA OR 10 FOR \$19.95
4830	\$1.95 EA OR 10 FOR \$19.95
4840	\$1.95 EA OR 10 FOR \$19.95
4850	\$1.9

jumps around alot slows down the computer considerably. Place the most frequently used program routines near the front of the program this will save time as the computer always starts at the beginning of the program to find a particular routine.

9. GOSUB is faster than GOTO if you will be coming back to the same part of the program later. This is because RETURN is fast. The location is stored in binary and is jumped to immediately. Also a FOR...NEXT loop can be very fast for mathematical calculations. All necessary tests are performed in machine code when using a FOR...NEXT loop.

10. IF...THEN is a very fast BASIC function. But it can also be made to work quicker. A statement IF X=1 AND Y>1 THEN... will perform quicker if written IF X=1 THEN IF Y>1 THEN... There may not seem to be much difference in these two statements but the second one will run a bit faster. The second statement will run very much quicker when X does not equal 1. If X is not 1 it will jump to the next program line without reading the rest of the line. While the first statement will be read in its entirety.

11. A FOR...NEXT loop can be very fast for mathematical calculations. All necessary tests are performed in machine code when using a FOR...NEXT loop. The FOR...NEXT loop saves time for the same reason the GOSUB...RETURN statement does. All necessary information is in binary, which saves the computer from converting from decimal to binary.

12. Another way to speed up a BASIC program is to insert a Machine Code routine for large programming tasks. Alphabetizing and large calculations can be done much quicker with a machine code routine. But the time spent

CLASSIFIED ADS

FREE ADS: Subscribers to QTS are allowed one free classified ad per issue. The only requirement is that it not be commercial in nature. The ad should be 37 characters per line with a maximum length of 10 lines. Want to sell some of your dusty equipment or start a user group? Send in your ad and reach thousands of T/Sers. Commercial ads: Rates are \$4.00 per line-minimum of 3 lines.

UPGRADING: Selling TS2068--Winky 2000-AERCO 2068 I/F-GORBANA Printer-Zebra Pen+software-AERCO V.2, PRO/FILE enhanced, Textwriter 2000+, Appointment/Scheduler by ZEBRA, TUTOR. Nine 2068 books incl. Guide beg/interm/advan., converting to T/S BASIC. SASE D. R. MacLeod, 1906 Ashley Dr, Phenix City, AL 36867 for complete list. 205-297-0634 after 9pm est.

TIMEX/SINCLAIR 2068 --Used SOFTWARE and HARDWARE. Koalpad with Aerco driver, Protex word processor, VU-3D, VU-FILE, Musicola, XADOM, Bugaboo, Penetrator, Diamonds, Much much more. Send SASE for a complete sale list and very reasonable prices. R. R. Smith, 428 Marsh Ave, Reno, NV 89509.

in developing a machine code routine may not be worth the time saved.

I hope that these 12 ways of speeding up BASIC are of use to you. If you have any other suggestions for speeding up BASIC or anything to do with BASIC programming why not write a short article or send any suggestions for articles to me at WMJ Date System. I am always looking for ideas.

QTS

Timex / Sinclair Owners...
TAKE A LOOK!



**ONLY
\$15 year
SIX ISSUES**

**TIME DESIGNS
MAGAZINE**

FOR YOUR
2068 - 10001500 - SPECTRUM

- * Readers nationwide (and Canada too!)
- * 36 Illustrated Pages
- * Published "On Time"
- * Interesting Articles / Programs
- * Current Information
- * Exclusive "TIS Shopper" Guide

SUBSCRIBE TODAY!

SAVE \$3.00 Off Newsstand Price. Send Coupon for a copy with Check or Money Order for \$15 (U.S. Funds Only) to address posted below. We will start your subscription right away upon receipt of your order.

TIME DESIGNS MAGAZINE COMPANY
20722 N.W. 4th Ct., Oregon 97031

Name _____
Address _____
City / State _____ Zip _____

CTM

"...received my money's worth with just one issue..."

— J. Trenbick

"...always stop to read CTM, even though most other magazines I receive (and write for) only get cursory examination..."

— Fred Blechman, K6UGT

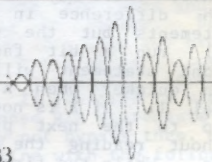
U.S.A.	\$15.00 for 1 year
Mexico, Canada	\$25.00
Foreign	\$35.00(land) - \$55.00(air)
(U.S. funds only)	
Permanent (U.S. Subscription)	\$100.00
Sample Copy	\$3.50

CHET LAMBERT, W4WDR

1704 Sam Drive • Birmingham, AL 35235
(205) 854 0271

SyncWare News

P.O. Box 64
Jefferson, NH 03583
Telephone: 603-586-7734



Name _____
Street _____
City/State/Zip _____
Payment _____
() check () VISA () Master Card
Card # _____ Expires _____

- () Send me 1 year of SYNCWARE NEWS!
Enclosed is \$16.95
() I want the BEST of SYNCWARE vol.1
All of last year in one big volume.
ONLY \$16.95

Do you find yourself looking for good, solid information for your Timex Sinclair computer? Do you want to know what makes it tick? Are you looking for new software, books, hardware or better yet, slicker ways to do your own programming? A YES answer to any of these questions is reason enough to subscribe to the SyncWare News. SWN is not a newsletter, but it is a journal for your machine. We try to explain the logic behind algorithms and not just give a program listing. We have advanced and beginning tutorials in a variety of areas. Our format is changing and upgrading, to provide easier, more appealing reading for everyone. If you're wary of wasting your money, \$2.00 will bring a sample issue for your perusal. We at SWN like our new direction, and we are sure that you'll agree.

Do you have a program or product for sale? Would you like to tell others about a service that you can perform? Drop us a line and we will tell others.

Subscribe !

1 year (6 issues)

\$ 16.95

Add \$3 a year in Canada, all other foreign add \$5 per year.

QuarTerS is published quarterly and is copyrighted 1986 by William M. Johnson d/b/a WMJ DATA SYSTEMS, 4 Butterfly Drive, Hauppauge, NY 11788 Tel. (516)543-5252. Reproduction of this magazine in whole or in part without written permission is prohibited by law. Publication dates: Winter-January * Spring-April * Summer-July * Fall-October. Issues will be mailed prior to the 26th of the publication month. Subscriptions: \$8.00 for one year (4 issues), \$14.00 for two years (8 issues). Overseas: \$11.00-one year, \$19.00-two years. Canada, Mexico and Overseas: Pay by International Money Order drawn on a New York bank in U. S. dollars. Checks should be made payable to: WMJ DATA SYSTEMS.

QuarTerS accepts articles, reviews and programs for possible publication in a future issue. QTS pays \$.08 per word and \$.15 per program line. All payment is for the edited version as it appears in QTS. Payment will be sent within 15 days of the end of the publication month, listed above. Payment can be waived by the author or credit for merchandise can be given for WMJ Data Systems goods. Programs should be recorded on cassette tape and a listing should also be provided. Listing on thermal paper should be photostated and copy should be clear and suitable for publication. Products sent or submissions sent will only be returned if requested and if proper postage is included. Letters, tips, and short program listings published do not receive compensation.

Advertising: All copy and payment must be in our hands by the last day of the month before the publication month, listed above. Rates effective starting Spring 1986 issue: Full page-\$125 * Half page-\$75 * Quarter page-\$40 * 1/8 page-\$25 * Classified \$4.00/line (3 line minimum-37 chars./line). Frequency discount: Contract for 1 year pay for only 3 issues, payment due at first insertion.

SUBSCRIPTION FORM

- () One Year \$10.00 (Overseas: \$12.00)
- () Two Years \$16.00 (Overseas: \$21.00)
- () New Subscriber
- () Renewal

Please Send Check or MO to:

WMJ DATA SYSTEMS
4 Butterfly Drive
Hauppauge, NY 11788

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

ACZ GENERAL LEDGER

"A small business accounting system"

A true double entry system that has the benefits of a manual ledger without the drawbacks. The program identifies transactions that do not balance and gives you the opportunity to make corrections. It will not post out-of-balance transactions, so the books always balance.

1. ACZ GENERAL LEDGER for the TS1000, TS1500 and Sinclair ZX81 all with 16K memory. This version allows 50 Balance Sheet accounts, 50 Income Statement accounts and processes 400 entries and accounts per session. Prints transactions and the three fundamental financial statements: Income Statement, Balance Sheet, and Owners Equity. Originally sold for \$29.95. Now only \$19.95.

2. ACZ GENERAL LEDGER 2.000 for the TS2068. The financial statements feature a flexible design so the reports fit your business whether it is a proprietorship, partnership, or corporation. And there's plenty of capacity with up to 150 named accounts, and up to 800 entries and accounts each month. Prints the following reports: Year-to Date Income Statement, Monthly Income Statement, Balance Sheet, Trial Balance, Ledger Detail, Journal Entries, and the Chart of Accounts. Originally sold for \$39.95. Now only \$19.95.

WMJ DATA SYSTEMS

4 BUTTERFLY DRIVE

HAUPPAUGE, NEW YORK 11788

